

App. No. 10/806,803
Office Action Dated January 11, 2006

REMARKS

Favorable reconsideration of this application is requested in view of the above amendments and the following remarks. Claims 14 and 15 are new.

New claim 14 is supported by page 7, lines 2-4. New claim 15 is supported by page 9, lines 20-23.

Claims 1 and 3-8 were rejected as being anticipated by Jones (US 5,869,169). Applicants traverse this rejection. Jones does not disclose a field-emission electron source including a surface-modifying layer formed on a surface of each of the cathodes emitting electrons, comprising a chemical bond between a cathode material comprising the cathodes and a material different from the cathode material, as required by claim 1. Jones discloses a cathode formed by depositing a top layer on a bottom layer (see column 4, lines 2-4). Jones teaches semiconductor formation by deposition. In such a process, when a second layer is deposited on a first layer, the second layer is deposited on a natural oxide film formed on the surface of the first layer. In contrast, claim 1 requires a surface-modifying layer which chemically bonds to the cathode material. For example, if each cathode is comprised of Si, a natural oxide film is removed from the cathode with hydrogen fluoride or the like, thereby ensuring that the cathode surface is clean and active (i.e. ready to chemically bond with another material). Once the cathode surface is active, it is subjected to a plasma treatment in an atmosphere of CHF₃ gas, resulting in the carbon of the gas and the silicon of the cathode surface being chemically bonded to create a Si-C bond. Jones takes no action to allow the formation of chemical bonds. Thus, there is no reasonable basis to assume that chemical bonding will occur between the deposit layers of Jones. Unlike the conventional layering taught by Jones, the chemical bond provided by claim 1 allows the elements (e.g. silicon) on the surface of each cathode to be bonded to the surface-modifying layer, providing a more stable bond (e.g. Si-C). Favorable reconsideration of claims 1 and 3-8 is requested.

New claims 14 and 15 should be considered allowable for at least the same reasons as claim 1, from which they depend. As previously noted, Jones does not suggest a chemical bond of a surface-modifying layer to a cathode material. Therefore, neither can Jones be considered to

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suggest a chemical bond of a surface-modifying layer comprising a bond between either silicon or molybdenum of a cathode material and carbon of a material of a surface-modifying layer, as respectively required by new claims 14 and 15. Favorable examination of new claims 14 and 15 is requested.

Claims 2, 12, and 13 were rejected as being unpatentable over Jones in view of Alig (US 4,178,531). Applicants traverse this rejection. Claims 2, 12, and 13 should be considered allowable for at least the same reasons as claim 1, from which they depend. Applicants are not conceding the correctness of the rejection as applied to the rejected claims. Favorable reconsideration of claims 2, 12, and 13 is requested.

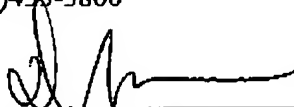
In view of the above, favorable reconsideration in the form of a notice of allowance is requested. Any questions regarding this communication can be directed to the undersigned attorney, Douglas P. Mueller, Reg. No. 30,300, at (612)445-3804.



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